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In re: Hinsberger et al.
Filed: Herewith
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REMARKS

Attached hereto are a Substitute Specification, Claims and Abstract of the Invention. Also attached is a marked-up version of the changes made to the Specification, Claims, and Abstract by the current amendment. No new matter has been added. The first page of the attached pages is captioned "VERSION WITH MARKINGS TO SHOW CHANGES MADE."

The Examiner is invited to telephone the undersigned, Applicant's Attorney of Record, to facilitate advancement of the present application.

Respectfully submitted,

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

~~Securing device for rear walls in grooves of cabinet furniture~~
SECURING DEVICE FOR REAR WALLS OF CABINET FURNITURE

TECHNICAL FIELD OF THE INVENTION

[0001] The invention relates to a securing device and more particularly, to a securing device for insertion into grooves in walls of cabinet furniture of the kind designated in greater detail in the main subject of patent claim 1.

DESCRIPTION OF THE RELATED ART
BACKGROUND INFORMATION

[0002] In the known design, such securing devices for cabinet furniture are typically single elements in the form of small blocks or brackets, which are The securing devices are set in the area of the rear inner corner between the rear wall and the ledge of the sidewalls and the shelves, with said ledge remaining behind the rear wall, in order to mount them using screws or nails, which are to be inserted through the diagonal through holes. In this manner, the rear wall and the respective shelf or top board and each sidewall of a cabinet are secured to one another at an angle of 90 degrees.

[0003] Handling such small securing devices is difficult, and there is the risk that when the securing device is not placed properly, the rear ledge will break away at the respective shelf

or sidewall of the cabinet, when the setscrew is inserted or the nail is hammered in. Since the grooves at the sidewalls and the shelf of the cabinet are typically wider by a certain play than the thickness of the rear wall to be held, there is the additional difficulty of securing the rear wall without play using the known small securing devices.

SUMMARY OF THE INVENTION

[0004] It is, therefore, ~~the objective~~an aspect of the invention to create a securing device of the kind mentioned above that is easier to handle, and when erecting cabinet furniture, in particular ready-to-assemble furniture, makes it possible to achieve a more reliable securing of the cabinet furniture elements, namely the rear wall, the shelf or the top board as well as the respective sidewall, which are to be connected in each corner area at an angle of 90 degrees to one another.

[0005] This aspect of the invention~~objective~~ is achieved according to the invention with a securing device for walls and set in grooves of cabinet furniture. The securing device has at least one first support element that can be placed in an area between a rear wall and a grooved sidewall, at least one second support element that can be placed between the rear wall and a grooved shelf and/or top board, whereby the support elements exhibit contact sides that are each at a right angle to each

other and diagonal to these contact sides, and at least one through--hole for receiving a set screw or a set pin. A plurality of support elements are integrated in one piece into two legs of a corner angle piece, wherein said two legs are at a right angle with respect to each other, wherein at least one of the plurality of support elements is formed at each of the legs--of the kind mentioned above through the characteristic feature of patent claim 1.

[0006] It is important for the invention that In the preferred embodiment, the corner angle piece possessing the plurality of at least two support elements that are is integrated in the corner angle piece, be as a larger component, which is easier to handle and which can be easily placed at the rear on the rear wall of the respective cabinet furniture in the corner between the rear wall, the respective shelf or top board and the adjacent sidewall, and then attached by inserting the setscrews or the nails. In this manner, the rear wall is, on the one hand, secured to the shelf or the top board, for short also called top, and on the other hand to the adjacent sidewall, such that the sidewall and the shelf are also arranged at an angle of 90 degrees relative to one another. This significantly facilitates the erection or assembly of the ready-to-assemble cabinet furniture that has to be carried out in a do-it-yourself manner. Thus, when assembling a shelf or a top board, a sidewall and the

rear wall, the shelf or top board which is inserted in the groove achieving a great stability after attaching the securing device ~~subject to the invention~~ to the corner area of the cabinet furniture formed in this manner and an angle accuracy of these three elements relative to one another, which facilitates the assembly of the additional parts of the cabinet furniture. It is typically sufficient, to provide one securing device ~~each in the areas of two of the~~ corners of the rectangular or square rear wall, where said corners are diagonally opposite to one another in order to provide sufficient stability for the cabinet furniture.

[0007] Advantageous design features of the invention are described herein covered in the sub claims. Particular mention should be made of the spring-like bars, which are attached protruding to the outside at the strike sides of the legs of the corner angle piece that are located away from one another. These bars have a thickness such that they can be inserted into the groove next to the rear wall, which is received by said groove of the respective shelf or top board and the adjacent sidewall in order to eliminate the play of the rear wall, which —as mentioned — is typically less wide than the grooves receiving it due to the required tolerances.

BRIEF DESCRIPTION OF THE DRAWINGS

[0008] These and other features and advantages of the present invention will be better understood by reading the following detailed description, taken together with the drawing wherein: In the following, the invention is explained in greater detail based on an exemplary embodiment and the drawings of which

[0009] Fig. 1 is a side view of a securing device according to the present invention;,

[00010] Fig. 2 is a top view of the securing device according to Fig. 1, with the circled details shown in a magnified view; ,

[00011] Fig. 3 is a perspective view of the securing device according to Figs.~~uses~~ 1 and 2; , and

[00012] Fig. 4 is a perspective view of the installed position of the securing device according to the present invention~~previous Figures.~~

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[00013] In detail, Fig. 1 shows a one-piece corner angle piece 1 withhaving two legs 2 that are perpendicular to one another. As

~~becomes~~ is apparent from the ~~in~~ magnified view ~~in~~ of Fig. 2 and the perspective view of Fig. 3, each of the two legs 2 of the corner angle piece 1 ~~consists of~~ has an angle profile that is formed from two support bars 3, 4, which are arranged perpendicular to one another. Toward the outer sides, these support bars 3, 4 each exhibit strike sides 5, 6, which also run perpendicular to one another. As in particular, Fig. 3 reveals, illustrates the strike sides 5 formed at the support bars 3 of the legs 2 of the corner angle piece 1. ~~In contrast,~~ The strike sides 5 and the support bars 3 are located away from each other and are at an angle of 90 degrees to one another. Contrary ~~In contrast,~~ the strike sides 6, which are present at the support bars 4 of the legs 2 of the corner angle piece 1, are located in one common plane.

[00014] At their inner sides, the two legs 2 of the corner angle piece 1 are connected to one another using bracing bars 8; however, a continuous board or solid triangular shaped piece can be provided in their place as well. The bracing bars 8 follow the support bars 4 and exhibit approximately the same thickness as the support bars 4 of the legs 2. The wider outer sides 9 of the bracing bars 8 are located in one common plane with the strike sides 6 of the support bars 4 of the legs 2, as can be seen in particular from the smaller view of Fig. 2. The legs 2 have distal ends, at their free ends, wherein the distal ends have

an ending surfaces that is are perpendicular to their longitudinal portion—stretch with the bracing bars 8 of the corner angle piece 1, which connect the legs 2, not protruding from said distal end surfaces.

[00015] In addition, the distal ends of the legs 2 of the corner angle piece 1 exhibit at their free endshave specially shaped support elements 10, which, regardless of the remaining design of the legs 2 of the corner angle piece 1, basically canwhich function as securing devices according to the present invention for the intended purpose of the application. However, in In the a preferred embodiment design, the support elements 10 are integrated in the legs 2 of the corner angle piece 1 as shown in Figs. 1, 3 and 4 the drawing, and protrude with their inner end area in the gusset space, the inner corner area, between the support bars 3, 4 of the legs 2. Thus, in the preferred embodiment, wherein the integrated support elements 10 are integrated, the support elements 10 haveexhibit a rear face area 11 that stretches extends at a 45 degree angle to the support bars 3, 4 of the legs 2, and which thus—is perpendicular to the diagonal plane of the inner corner between the bracing bars 8 and the respective leg 2. Arranged in the direction of the diagonals of the inner corners between the support bars 3, 4 of the respective leg 2 is a through hole 12, which expands to an insertion opening 13 at the rear face side 11 of the protruding,

thicker area of the support elements 10. The through-hole 12 stretches to the outer corner edge between the support bars 3, 4 of the legs 2 and is used for receiving a means of attachment, which shall be addressed below.

[00016] The legs 2 of the corner angle piece 1 merge by means of an interim bar 14, which forms an outer flat portion 15 at the crest of the corner angle piece 1. In addition, spring-like bars 16 are attached to the corner angle piece 1 at the outer sides of the legs 2, where said spring-like bars 16 exhibit a flat longitudinal side 17, Fig. 2, which is located in a common plane with the strike sides 6 of the support bars 4 of the legs 2 and the outer sides 9 of the bracing bars 8 that connect the legs 2. The spring bars 16 taper off in a wedge shape toward the longitudinal edges 18, which ~~run freely are~~ parallel to the longitudinal direction of the legs 2.

[00017] Fig. 4 illustrates the purpose of a corner angle piece 1 according to the present invention of the kind described above, which serves as a securing device for cabinet furniture. Fig. 4 shows presents one of the lower corner areas of such a piece of cabinet furniture. For example, one can recognize a board 19, namely a so-called bottom board, that has placed upon it a sidewall 20 of the cabinet furniture mounted to it in a perpendicular arrangement. The board 19 and the sidewall 20 to

be secured to it at a right angle ~~exhibit~~have grooves 21 that have been cut into them near their rear narrow side areas and parallel to them for this purpose, wherein both grooves 21 merge in a common plane. In this manner, a rectangular rear wall 22 can be received by these grooves 21, wherein said rear wall 22 typically has a width that is slightly smaller relative to than the width of the grooves 21.

[00018] Viewed from the front of the cabinet furniture, there is a ledge 23 of the board 19 and the wall 20 behind the placed and grooved-in rear wall 22. The corner angle device 1 serving as a securing device is placed on this ledge 23, ~~in fact,~~ with the strike sides 5 of its legs 2 that are at an angle of 90 degrees to one another. This occurs in a manner such that the spring-like bars 16, which protrude outwards at the two legs, engage in the grooves 21 of the board 19 and the sidewall 20 at the corner angle piece 2 adjacent to the rear wall 22. Due to the wedge effect of the spring-like bars 16, the rear wall 22 is at the same time suspended play-free in the grooves 21 in the area of the corner angle piece 1, whereby said corner angle piece 2 contacts the rear wall 22 together with the strike sides 6 of its legs 2 as well as the flat outer sides 9 of its bracing bars 8. Thereafter, a screw 24 ~~each~~ is screwed into the integrated support elements 10 of the legs 2, which, therefore, together act as support members, through the through-hole 12 all the way to

the material of the rear wall 22 and of the board 19 or the sidewall 20, respectively. This can occur only if the board 19 and the sidewall 20 are oriented precisely at a right angle to one another and are stabilized in relation to one another at the correct angle via the corner angle piece 1 as well as the secured rear wall in the groove.

[00019] Modifications and substitutions by one of ordinary skill in the art are considered to be within the scope of the present invention which is not to be limited except by the claims which follow.

~~Patent claims~~ CLAIMS

1. A securing device for rear walls set in grooves of cabinet furniture ~~exhibits including~~ at least one first support element ~~that can be placed in the~~ an angle area between the rear wall and a grooved sidewall and at least one ~~other~~ second support element ~~that can be placed between the rear wall and a grooved shelf and/or top board,~~ whereby the first and second support elements ~~have exhibit~~ contact sides ~~that are each~~ at a right angle to one another and diagonal to these contact sides and a through hole for receiving a set screw or a set pin, wherein characterized in that the at least one first and second support elements (10) are integrated in one piece into the two legs (2) of a corner angle piece (1), and wherein said legs are at a right angle to one another, and whereby at least one of the at least one first and second support elements (10) is formed at each of the legs (2).

2. A securing device as set forth in claim 1, characterized in that wherein the legs (2) of the corner angle piece (1) including the at least one first and second support elements have (10) are as a whole designed as support members and exhibit at support bars (3, 4) that are at a right angle to one another and including strike sides, wherein each two outer planethe strike sides (5, 6) as extended contact sides of the at least one

support elements (10), whereby the strike sides (6) of both legs (2) that are located at the same side of the corner angle piece (1) are located together in one common plane.

3. A securing device as set forth in claim 1 or 2, characterized in that wherein the corner angle piece has a (1) at its crest area, wherein the crest area has exhibits a flat region (15) toward the an outside, and wherein the its legs (2) are operatively connected to each other one another via an interim bar at an angle (14) that runs in a sloped fashion with respect regard to the legs.

4. A securing device as set forth in one of the claims 31—3, wherein characterized in that the legs (2) of the corner angle piece (1) are of approximately the same length, and wherein in that the through holes (12) of the at least one first and second support elements (10) are arranged at each of the two legs (2) at equal distances from the crest area of the corner angle piece (1).

5. A securing device as set forth in claim 4, characterized in that wherein the through holes (12) of the at least one support elements (10) are arranged at the distal ends of the legs (2) of the corner angle piece (1).

6. A securing device as set forth in one of the claims 1—
5, wherein characterized in that the legs (2) in an the inner area
of the corner angle piece (1) are connected to one another using
one-piece attached bracing bars (8).

7. A securing device as set forth in claim 5, characterized
in thatwherein the bracing bars (8) of the corner angle piece (1)
have plane outer sides (9), whichand wherein the outer sides are
even with the two strike sides (6) of the legs (2) of the corner
angle piece (1) and are in one plane with said strike sides.

8. A securing device as set forth in claim 7, characterized
in thatwherein the bracing bars (8) follow the support bars (4)
with the strike sides (6).

9. A securing device as set forth in one of the claims 2—
8, characterized in thatwherein an end region of the integrated at
least one first and second support elements (10) is attached and
protruding in a protruding manner to thean inner sides (7) of the
legs (2) of the corner angle piece (1) and exhibitshaving a face
side (11), which stands perpendicular to a the diagonal plane of
the inner corners between the support bars (3, 4) of the legs —
(2), where theand proximate an insertion opening (13) of the
respective through hole (12) is located.

10. A securing device as set forth in one of the claims 2—9, characterized in that further including bars (16) protruding transverse from the legs in a rectangular manner are arranged in a manner of springs at the strike sides (6) of the legs (2) of the corner angle piece (1) that are apart from each other, wherein the bars have one longitudinal sides, and wherein one of the bars is (17) of said bars (16) are even with the second strike sides (6) of the legs (2) of the corner angle piece (1) located in the same plane.

11. A securing device as set forth in claim 10, characterized in that wherein the spring-like bars (16) are spring-like and taper off in a wedge shape toward their free longitudinal edges (18).

12. A securing device as set forth in one of the claims 1—11, characterized in that wherein the corner angle piece (1) is a synthetic injection molded part.

Abstract**ABSTRACT OF THE INVENTION**

A securing device for rear walls set in grooves of cabinet furniture ~~exhibits~~ including at least one first support element that can be placed in ~~the~~an angle area between the rear wall and a grooved sidewall and at least one ~~other~~second support element that can be placed in the angle area between the rear wall and a grooved shelf and/or top board. The at least one support elements (10) ~~exhibits~~ has contact sides that are each at a right angle to one another and diagonal to these contact sides, and a through-hole (12) for receiving a screw, setscrew, or a set pin, or other fastener. For purposes of easier handling and more reliable securing of the cabinet furniture elements, which are to be connected to one another in the corner area at an angle of 90 degrees, the at least two~~first and second~~ support elements (10) are integrated in one piece into the two legs (2) of a corner angle piece. At least one of the first or second support elements (10) is formed at each of the legs (2) of the corner angle piece.